IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:	)	
	)	
Robert C. Lam	)	Examiner: Steele, Jennifer A
	)	
Serial No.: 10/678,720	)	Group Art Unit: 1794
	)	
Filed: October 3, 2003	)	Confirmation No: 6119
	)	
For: Friction Material Containing Partially Carbonized Carbon Fibers	)	Docket No: DKT00076 (0309.4085.901)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Sir:

Please consider this Reply Brief in response to the Examiner's Answer mailed July 20, 2009.

Reply to the Examiner's Answer

The Appellant's prior counsel filed an Appeal Brief on December 18, 2008. The Examiner filed a responsive Answer on July 20, 2009. The Appellant's current counsel would like the Board to consider a few additional arguments beyond those presented in the Appeal Brief. It is believe that this Reply Brief fully complies with 37 CFR 41.41(a) as the arguments presented are supported by the record and do not require the Board to consider any new or non-admitted evidence.

The Obviousness Rejections of Claims 6-9, 12-13, and 29

Claims 6-9, 12-13, and 29 have been rejected as being obvious over Lam (EP 1203897) in view of Lam (EP 0971151) and further in view of Smith (US 5,965,658). The Appeal Brief filed December 18, 2008 argued claims 6-9, 12-13, and 29 as a whole. The Appellant, however, would now like to argue and have the Board separately consider the patentability of independent claim 6 and dependent claim 29 over the same cited references.

It is believed that the Appellant is entitled to modify the grouping of claims on Appeal in this Reply Brief. *See* 37 CFR 41.37(c)(1)(VII) and MPEP 1205.02 (Any arguments or authorities not included in the brief or **a reply brief filed pursuant to § 41.41** will be refused consideration by the Board, unless good cause is shown.) (emphasis added by Appellant); *In re McDaniel* 293 F.3d 1379, 1382-84, 63 USPQ2d 1462, 1464-65 (Fed. Cir. 2002) (considering statements made during oral arguments when deciding whether or not the Board should have separately reviewed the patentability of individual claims within a group of rejected claims.); 37 CFR 41.43 (permitting the Examiner to file a supplemental answer to a Reply Brief filed under § 41.41 **in response to any new issue raised in the Reply Brief**) (emphasis added by Appellant). The Appellant would therefore greatly appreciate it if the Board, in its decision, would separately address whether

independent claim 6 and dependent claim 29 are patentable over Lam '897 in view of Lam '151 and further in view of Smith patent as if the following arguments had originally been presented in the Appeal Brief.

Section 103 forbids issuance of a patent when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406, 82 USPQ2d 1385, 1391 (2007). To establish a prima facie case of obviousness, the Examiner must show that a plausible reason existed for a skilled artisan to combine the teachings of the cited references in the manner proposed by the Examiner and that such a combination would disclose each and every limitation of the claimed invention. *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006); *In re Benson*, 418 F.2d 1251, 1254-55, 164 USPQ 22, 24-25 (CCPA 1969); *In re Wertheim*, 541 F.2d 257, 269; 191 USPQ 90, 102 (CCPA 1976).

Independent claim 6 has already been described with reference to the Application in the Appellant's Appeal Brief and, as such, need not re-summarize here. Dependent claim 29 depends from claim 6 and recites that the primary layer of the fibrous base material further comprises about 5% to about 35%, by weight, of partially carbonized carbon fibers based on the weight of the primary layer. *Page 7, lines 12-26; Page 13, lines 18-28; Page 15 line 28 – Page 16 line 12.* The partially carbonized carbon fibers are 65 to 90% carbonized. *Page 7, lines 20-21.*

The Examiner argues that independent claim 6 and dependent claim 29 are rendered obvious by a combination of all three cited references. In support of such a combination to meet the language of claims 6 and 29, the Examiner states that Lam '897 teaches the use of carbon fibers in a primary layer, that the Lam '151 reference teaches the use of carbon fibers in the secondary layer and further that the primary layer and the secondary layer can have same

composition, and that the Smith reference teaches the desirability to substitute partially carbonized carbonaceous fibers for the carbon fibers in each of the primary and secondary layers derived from the combination of the Lam '897 and Lam '151 references. *See Examiners answer pages 6, 7–8, 10 and 12.*

The Appellant contends, however, that (1) a skilled artisan would not combine the cited references as argued by the Examiner and further that (2) dependent claim 29 recites limitations not disclosed, either expressly or implicitly, by the Lam '897, the Lam '151, and/or the Smith references when considered as a whole either individually or collectively. The Appellant therefore submits that a prima facie case of obviousness has not been established for both of independent claim 6 and dependent claim 29. The first argument advance below is applicable to independent claim 1 while the second argument is applicable only to dependent claim 29.

1. A SKILLED ARTISAN WOULD HAVE NO REASON TO COMBINE THE TEACHINGS OF LAM '897, LAM '151, AND SMITH AS PROPOSED BY THE EXAMINER

The Lam '897 reference – the primary reference – discloses a fibrous base material comprising a primary layer and a secondary layer on top of the primary layer. *Abstract; paragraph [0001].* The primary layer may comprise aramid fibers alone and/or combinations of less fibrillated aramid fibers, cotton fibers, carbon fibers, carbon particles and at least one filler material and, optionally, other ingredients. *Paragraphs [0024], [0049], [0054]–[0056].* The secondary layer, on the other hand, may comprise friction modifying particles such as silica particles, resin powders, silicone resins, epoxy resins, partial and/or fully carbonized carbon powders and/or particles, and mixtures of such friction modifying particles. *Paragraphs [0059]-[0060].* Exemplary silica particles include diatomaceous earth, Celite, Celatom, and/or silicon dioxide. *Paragraph [0060].*

The Lam '151 reference discloses a two-ply fibrous base material comprising a primary layer and a secondary layer adjacent to and on top of the primary layer. *Abstract; paragraphs [0001] and [0018].* The primary layer is highly porous, non-linearly elastic and has a low compression set while the secondary layer has a high temperature, high energy and low compression set formulation. *Paragraph [0018].* The secondary layer is generally less porous than the primary layer. *Abstract; paragraph [0018] and [0062].* The primary layer may comprise at least one type of non-linearly elastic fiber such as high strength less fibrillated aramid fiber, cotton fibers, at least one type of filler material such as diatomaceous earth, and in certain embodiments carbon particles and/or graphite particles. *Paragraph [0040].* The secondary layer, on the other hand, may comprise high temperature resistance and high strength fibers such as fibrillated aramid fibers and carbon fibers, phenolic or novoloid fibers, fillers, and in certain embodiments carbon particles and/or graphite particles and optionally cotton fibers. *Paragraph [0040].* The use of carbon fibers in the secondary layer can provide temperature resistance to the fibrous base material, increase wear and lining compression resistance, and also provide the fibrous base material with delamination and noise resistance. *Paragraph [0044].* The amount of carbon fibers preferably included in the secondary layer ranges from about 5% to about 30%. *Paragraph [0044].* While the exact size of the carbon fibers is not expressly stated in the Lam '151 reference, it should be noted that other fiber materials (novoloid fibers) that may be included in the secondary layer may have an average length of about 0.2 mm to about 3 mm. *Paragraph [0052].*

The Examiner argued it would have been obvious to a skilled artisan employ the carbon fibers of the Lam '151 reference in the secondary layer of the fibrous base material disclosed by the Lam '897 reference to form a fibrous base material having a primary layer and a secondary layer that both contain carbon fibers. The Examiner supported this combination of references by

alleging an improvement in properties of the Lam '897 friction material. *Examiner's Answer, pages 5, 7-8, and 10.* The Appellant contends that such a combination of references is not supported by the facts.

At the outset, it is worth noting that the Lam '897 reference does not disclose or suggest that carbon fibers or any other fibers may be substituted for the carbon particles in the secondary layer or otherwise included in the secondary layer. In fact, and to the contrary, the Lam '897 reference explicitly teaches that only small particles of a specific size should be used in the formulation of its secondary layer:

> The uniformity of the secondary layer of the friction modifying particles on the surface of fibrous base materials is achieved by using a range and size of the particles that is preferably from about 0.5 to about 80 microns, and preferably about .5 to about 20 microns. In these certain embodiments, it has been discovered that if the friction modifying particle size is too large or too small, the optimum three-dimensional structure is [sic] not achieved and, consequently, the heat dissipation is not as optimum. *Paragraph [0058].*

This discussion in the Lam '897 reference as to the purpose of using certain-sized particles in the secondary layer would seem to discourage a skilled artisan from selecting the fibers disclosed in the Lam '151 reference and then either (1) substituting those fibers for the carbon particles in the secondary layer of the fibrous base material taught by the Lam '897 reference or (2) otherwise adding those fibers to the secondary layer without removing the carbon particles. Such a modification, as proposed by the Examiner, would prevent the formation of a uniform and optimal three-dimensional structure in the secondary layer of the Lam '897 fibrous base material and further lead to less efficient heat dissipation, as stated by the Lam '897 reference. *Lam '897, paragraph [0058].*

Based on this teaching in the Lam '897 reference, a skilled artisan considering the cited references as a whole would therefore not be inclined to substitute the seemingly larger carbon

fibers disclosed in the Lam '151 reference (comparable in size to the novoloid fibers at 0.2 to 3 mm) for the smaller carbon particles (0.5 to about 80 microns) in the secondary layer of the fibrous based material disclosed in the Lam '897 reference. The Examiner's arguments to the contrary are very general in nature (i.e., to improve properties) and are based only on select and out-of-context teachings in the cited references as opposed to what those references as a whole. A determination of obviousness founded on such an analysis constitutes reversible error and warrants reversal of the 103(a) obviousness rejection of independent claim 6 and, consequently, dependent claim 29. *See, e.g., In re Wesslau*, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965) ("It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.").

2. THE COMBINATION OF LAM '897, LAM '151, AND SMITH, EVEN IF APPROPRIATE, DOES NOT DISCLOSE EACH AND EVERY LIMITATION OF CLAIM 29

The teachings of the Lam '897 and the Lam '151 references, as set forth in the previous section, are also applicable here.

Of further interest in this section, however, is the teaching in the Lam '151 reference that it's primary and secondary layers can comprise the same or different compositions while having different bases, weights and/or densities. *Lam '151, paragraphs [0039]-[0041].* But this statement or series of statements, when read in the context of the entire Lam '151 specification, does not mean that any combination of materials that can serve as the primary layer can also be utilized to form a secondary layer, and vice versa. Rather, such a disclosure indicates that the primary and secondary layers can comprise the same composition in instances where both layers are formed solely from materials dislcosed as being useable in both the primary and secondary

layers. For example, the Lam '151 reference teaches that aramid fibers, cotton fibers, graphite particles, carbon particles, fillers, and processing aids may be included in both the primary layer and the secondary layer. *Paragraphs [0040], [0045]-[0050], [0053], [0055], [0056], and [0057].* Thus, a primary layer and a secondary layer formed from only these materials may in fact exhibit the same composition if desired.

In some instances, however, the primary layer and the secondary layer cannot have the same composition. This occurs most notably when the secondary layer is formed from one or more materials that are not disclosed as being common ingredients for both the primary and secondary layers. For example, one material that the Lam '151 reference discloses as only being useful in the secondary layer is carbon fibers. *Paragraphs [0040] and [0044].* Thus, when carbon fibers are employed in the secondary layer, it stands to reason that the primary layer and the secondary layer may not exhibit the same composition since carbon fibers are not disclosed as potential ingredients for the primary layer.

The Appellant's contention that the Lam '151 reference does not disclose a fibrous base material in which both the primary layer and the secondary layer include carbon fibers is supported by the Lam '151 specification and its many examples.

At the outset of the specification, Lam '151 discloses that the primary layer may comprise non-linearly elastic fibers such as aramid pulp and/or fibers, cotton fibers, fillers, and in certain embodiments, carbon particles and/or graphite particles. *Paragraphs [0018] and [0040].* Lam '151 then discloses that the secondary layer, on the other hand, may comprise high temperature resistant and high strength fibers and friction paper-forming materials such as aramid fibers, carbon fibers, cotton or other cellulose fibers, fillers and/or phenolic or novoloid fibers and in certain embodiments, carbon particles and/or graphite particles. *Paragraphs [0018] and [0040].* The initial general discussion of the primary and secondary layers in the Lam '151 specification

thus lists carbon fibers as a possible ingredient only for the secondary layer. The remainder of the specification – which discusses the many ingredients of the primary and secondary layers in more detail – lists somewhat clearly those materials that may be used in both the primary layer and the secondary layer and those that may not. For instance, the Lam '151 specification mentions that many different types of materials can be used in the primary and/or secondary layers but specifically mentions that carbon fibers may only be employed in the secondary layer. *See paragraphs [0044 – carbon fibers], [0045 – less fibrillated aramid fibers], [0046 – more fibrillated aramid fibers], [0052 – novoloid fibers], [0053 – graphite], [0055 – carbon particles], [0056 – fillers], [0057 – processing aids], and [0059 – friction particles].*

The Examples provided in the Lam '151 reference also support the Appellant's argument. For instance, Example 1 discloses a primary layer formed from 60% cotton and 40% celite and six different secondary layers (labeled A-F). *Paragraph [0061, Table 1].* But only the secondary layer of friction material F contains carbon fibers – disclosed at 30%. *Paragraph [0061, Table 1].*

Example 2 discloses three two-ply friction materials labeled G, H, and I that each have a different primary layer. *Paragraph [0094, Table 7].* Primary layer G has a composition of 10% cotton and 40% celite. *Paragraph [0094, Table 7].* Primary layer H has a composition of 45% cotton, 40% celite, and 15% glass fibers. *Paragraph [0094, Table 7].* And primary layer I has a composition of 60% cotton and 40% celite. *Paragraph [0094, Table 7].* The disclosed composition for the secondary layer utilized with each of primary layers G, H, and I is 30% aramid floc and/or fiber, 25% celite, 20% silica particles, 15% isoprene type elastomeric particles, and 10% glass fibers.

Examples 4 and 5 disclose a fibrous base material having a primary layer and a secondary layer with the same composition but a different density. *Paragraph [0130], [0135], and [0140, Table 16].* The disclosed composition for the friction materials of Example 4 is 36.8% cotton,

4.8% aramid pulp, 13.6% celite, 4.8% silicon nitride particles, 4.0% nitrile elastomeric polymer particles, 4.0% CNSL particles, 12.0% very hard CNSL Particles, 10% novoloid fibers of 3mm length, and 10% novoloid fibers of 0.20 mm length. *Paragraph [0132].* The density of the primary layer and the secondary layer were altered by using more mechanically refined cotton fibers to achieve a higher layer density. *Paragraph [0130].* The disclosed composition for both the primary and secondary layers of Example 5 is 32% aramid pulp, 26% celite, 16% silica, 16% nitrile type elastomeric particles, and 10% glass fibers. *Paragraph [0130, Table 16].*

Example 6 discloses a primary layer that comprises about 5% to about 30% non-linearly elastic PET fibers, about 20% to about 60% cotton fibers, and about 10% to about 40% fillers. *Paragraph [0150].* Example 6 also discloses a secondary layer for use with the primary layer just described that comprises about 10% to about 40% porous activated carbon particles, about 10% to about 30% cotton fibers, about 5% to about 30% precision cut aramid fibers, about 0-20% synthetic graphite, and about 0-40% fillers. *Paragraph [0150].*

Example 7 discloses a two-ply friction material (labeled P) that includes a primary layer comprising about 20% to about 60% cotton fibers, about 10% to about 30% less fibrillated aramid fibers having about 525 CSF (Canadian Standard Freeness) or greater, about 10% to about 30% fillers, about 10% to about 30% graphite and/or carbon particles, and about 0-3% latex processing aids. *Paragraph [0160].* The secondary layer of Example 7 comprises about 0-30% cotton fibers, about 5% to 45% more fibrillated aramid fibers having about 525 CSF or less, about 5% to about 35% fillers, about 0-30% carbon particles and/or graphite, about 5% to about 30% carbon fibers, about 1% to about 10% novoloid fibers, and about 0-3% latex processing aids. *Paragraph [0159].*

Not a single recited Example, as apparent from the description of Examples above, discloses the use of carbon fibers in the primary layer of the Lam '151 fibrous based material. Carbon fibers are employed only in the secondary layer of friction material F in Example 1 and the

secondary layer of friction material P in Example 7. The friction material in each of those Examples, as expected, is fabricated from a primary layer and a secondary layer that have differing compositions since carbon fibers are not contemplated by the Lam '151 reference as a possible ingredient for a primary layer. Likewise, carbon fibers are entirely absent from both the primary layer and the secondary layer in the Examples that disclose friction materials formed from a primary layer and a secondary layer of the same composition (Examples 4 and 5).

Based on the above discussion of the Lam '151 reference, the Appellant submits that the Examiner's reliance on a statement in the Lam '151 reference indicating that the primary layer and the secondary layer can have the same composition is not sufficient to support the factual finding that a skilled artisan would combine the teachings of the Lam '897 reference and the Lam '151 reference and arrive at a fibrous base material that includes a primary layer and a secondary layer that each contain carbon fibers. The Examiner's insistence that both the primary layer and the secondary layer in Lam '151 can include carbon fibers finds no real factual support in the references themselves beyond an ambiguous statement made in the Lam '151 specification that has been given an overly broad and generalized interpretation by the Examiner that is inconsistent with the teachings of that reference as a whole.

For at least this reason, the Appellant contends that a skilled artisan would have no reason to combine the Lam '897 and the Lam '151 references to produce a fibrous base material with a primary layer and a secondary layer that both include carbon fibers that can be modified by the teachings of Smith to arrive at the subject matter of dependent claim 29. The ambiguous statement made in the Lam' 151 reference declaring that its primary layer and secondary layer can have the same composition is not sufficient to support a factual finding that a skilled artisan would select the primary layer of Lam '897 and combine it with the secondary layer of Lam '151 especially since neither reference encourages such a combination.

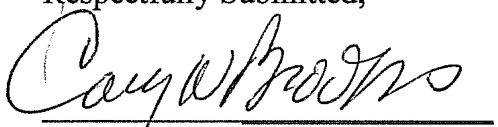
For at least this reason also, the Appellant respectfully requests that the board reverse the 103(a) obviousness rejection of dependent claim 29.

Conclusion

The Examiner has failed to establish that the Lam '897, the Lam '151, and the Smith references render claims 6-9, 12-13, and 29 prima facie obvious as argued in the Appeal Brief and in this Reply Brief. The Appeal Brief addressed these claims as a single group. The Reply Brief additionally argued that dependent claim 29 is separately patentable over those cited references for an additional reason. The Appellant therefore respectfully requests that the Board separately consider the patentability of claim 29 and reverse the Examiner's 103(a) rejections of claims 6-9, 12-13, and 29.

Please charge the requisite fee for filing this Reply Brief and any other required fees, or credit any excess payments, to Deposit Account No. 50-0852.

Respectfully Submitted,



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